

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
30 June 2005 (30.06.2005)

PCT

(10) International Publication Number
WO 2005/058152 A1

(51) International Patent Classification⁷: **A61B 5/00, 3/10**

(21) International Application Number:
PCT/GB2004/004946

(22) International Filing Date:
24 November 2004 (24.11.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0328866.9 12 December 2003 (12.12.2003) GB

(71) Applicant (for all designated States except US): **LEIN APPLIED DIAGNOSTICS LIMITED** [GB/GB]; 27 The Junipers, Wokingham Berkshire RG41 4UX (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **DALY, Daniel, John** [GB/GB]; 27 The Junipers, Wokingham Berkshire RG41 4UX (GB). **CLARK, Graeme, Lawrence** [GB/GB]; 170 Priests Lane, Shenfield Essex CM15 8HT (GB).

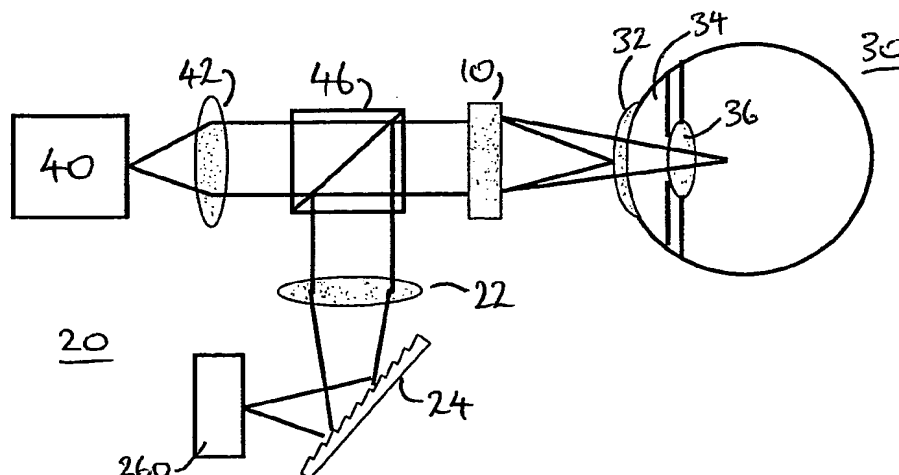
(74) Agents: **PALMER, Jonathan, Richard et al.**; BOULT WADE TENNANT, Verulam Gardens, 70 Gray's Inn Road, LONDON WC1X 8BT (GB).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: **EXTENDED FOCAL REGION MEASURING APPARATUS AND METHOD**



(57) Abstract: A method and apparatus for measuring an apparent depth (l) of a section of an animal body are disclosed. Light is focused concurrently to an extended focal region (R) comprising a plurality or continuum of measurement locations. Light reflected by a refractive index interface coincident with one of the plurality of measurement locations is then detected. Detected light signals are generated from light reflected from first and second interfaces respectively defining the section under investigation, so that the apparent positions of the first and second interfaces may be derived. A confocal arrangement and an axicon element (12) may be employed. Preferably, the section is the aqueous humor (34) of an eye (30). From changes in its refractive index (n) corresponding changes in glucose concentration in the aqueous humor and, in turn, in the bloodstream of a patient may be derived, offering a non-invasive monitoring means for diabetic patients. Other compounds and structures of the body may alternatively be investigated.

WO 2005/058152 A1



Declaration under Rule 4.17:

— *of inventorship (Rule 4.17(iv)) for US only*

Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.